Updated
2001 Power & Operations Outlook

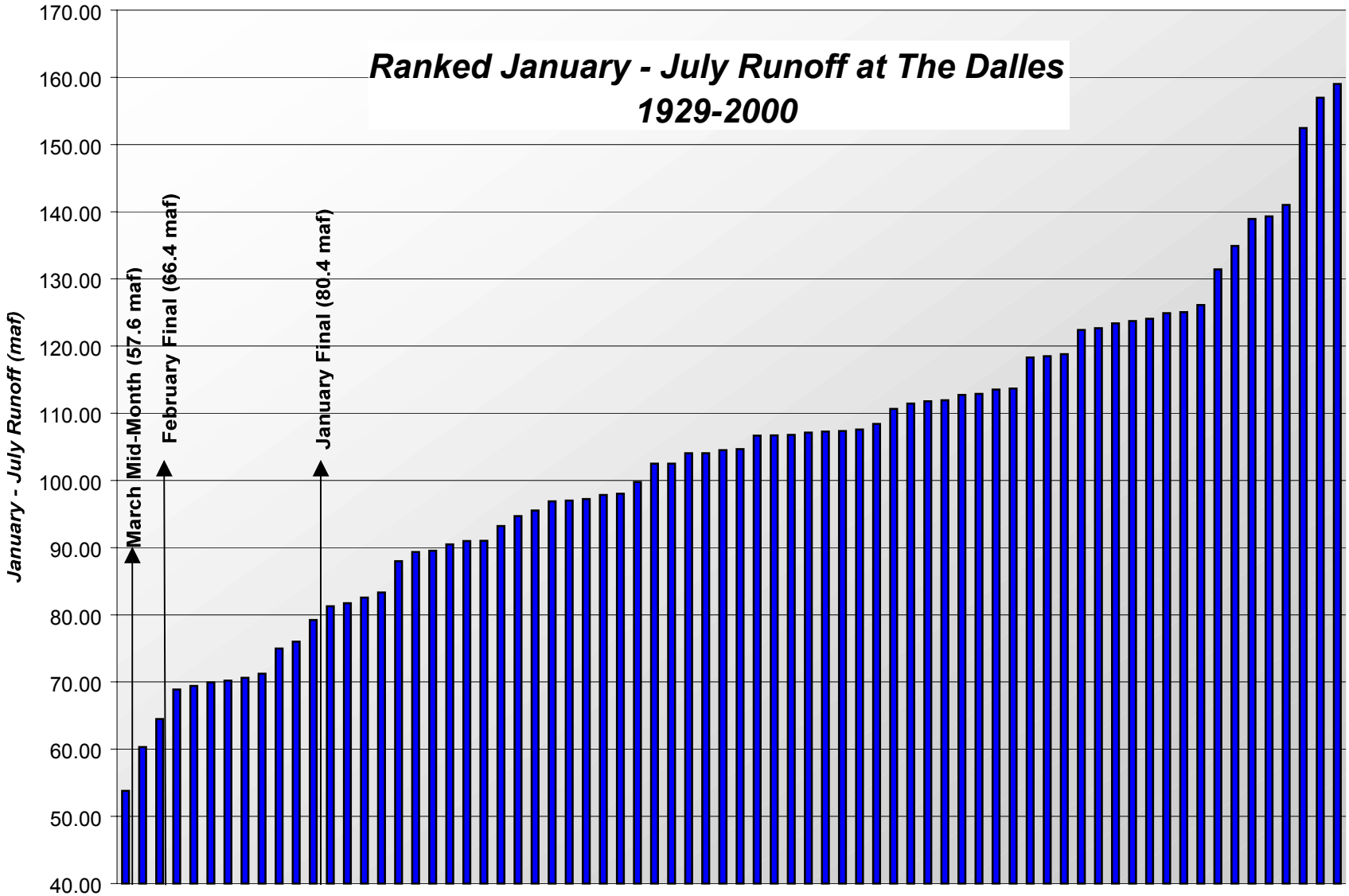
Bonneville Power Administration

March 16, 2001

Introduction

- For 2001, there is a MAF threshold at which BPA can only meet load obligations, but no other system objectives
- If 2001 conditions exceed this threshold, there are more choices about how to run the system to meet various objectives
- Despite a significant rate increase, there are cash flow issues in FY 2002 that can be affected by 2001 end of year reserves

The Water Situation



The Water Situation - Updated March 2001

- As of March 1, the weighted Columbia Basin snowpack was 53% of average. The historic low year of 1977 had a slightly lower March 1 overall snowpack.

- Key Question: Are we heading for a new record low and if so, how low can the volume go?
  - One way to look at this question is to look at the 72 year record and accumulate the volume from the lowest streamflow on record for each month in the January-July period.
  - This results in a volume of 51.3 maf, slightly lower than the record of 53.8 maf in 1977.

- Since November the observed streamflows have ranked (using the 72 year record) as follows:

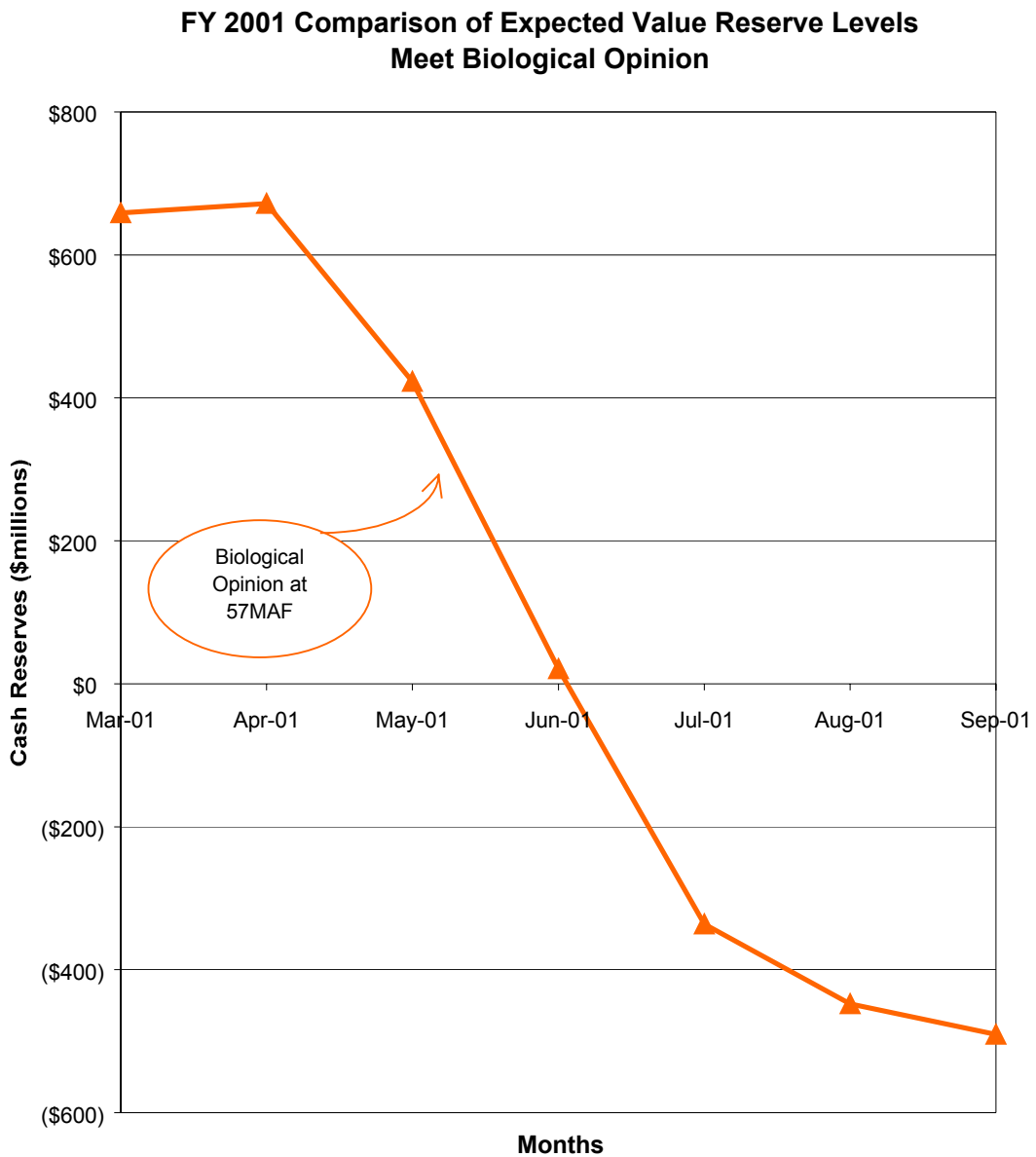
  - November – 10th lowest
  - December – 6th lowest
  - January – 3rd lowest
  - February – 3rd lowest.

- BPA uses Ensemble Streamflow Prediction (ESP) methodology from the National Weather Service River Forecast System (NWSRFS) model to forecast future streamflows. The following streamflow, operational, and financial information is based on the eight future streamflow scenarios produced by ESP.

Efforts to Reduce Load

- BPA sponsored ads in 17 Northwest newspapers informing the public of measures they can take to conserve electricity.
- For January BPA contracted for a total of 1300 MWs in market purchases and DSI load reductions at a cost of $200 million.
- For February, market purchases and DSI load reductions totaled 460 aMW at approximately $42 million.
- BPA has developed initial strategies for pursuing voluntary purchases of irrigation pumping loads.
- BPA assisted the Northwest Governors in their public call for a 10% reduction in energy consumption.
- BPA accelerated implementation of its $200 million conservation investment and renewable resources development incentive program from October 2001 to February.

FY 2001 Financials



Cash Flow

(Probability of < $0 Reserves)

	Meet Biological Opinion
Mar-01	0.0%
Apr-01	0.0%
May-01	3.4%
Jun-01	39.3%
Jul-01	85.5%
Aug-01	93.1%
Sep-01	92.4%

FY2001 Ending Reserve Levels

(Probability of < $300M Reserves)

95.4%

(Probability of < $650M Reserves)

100.0%

Assumptions:

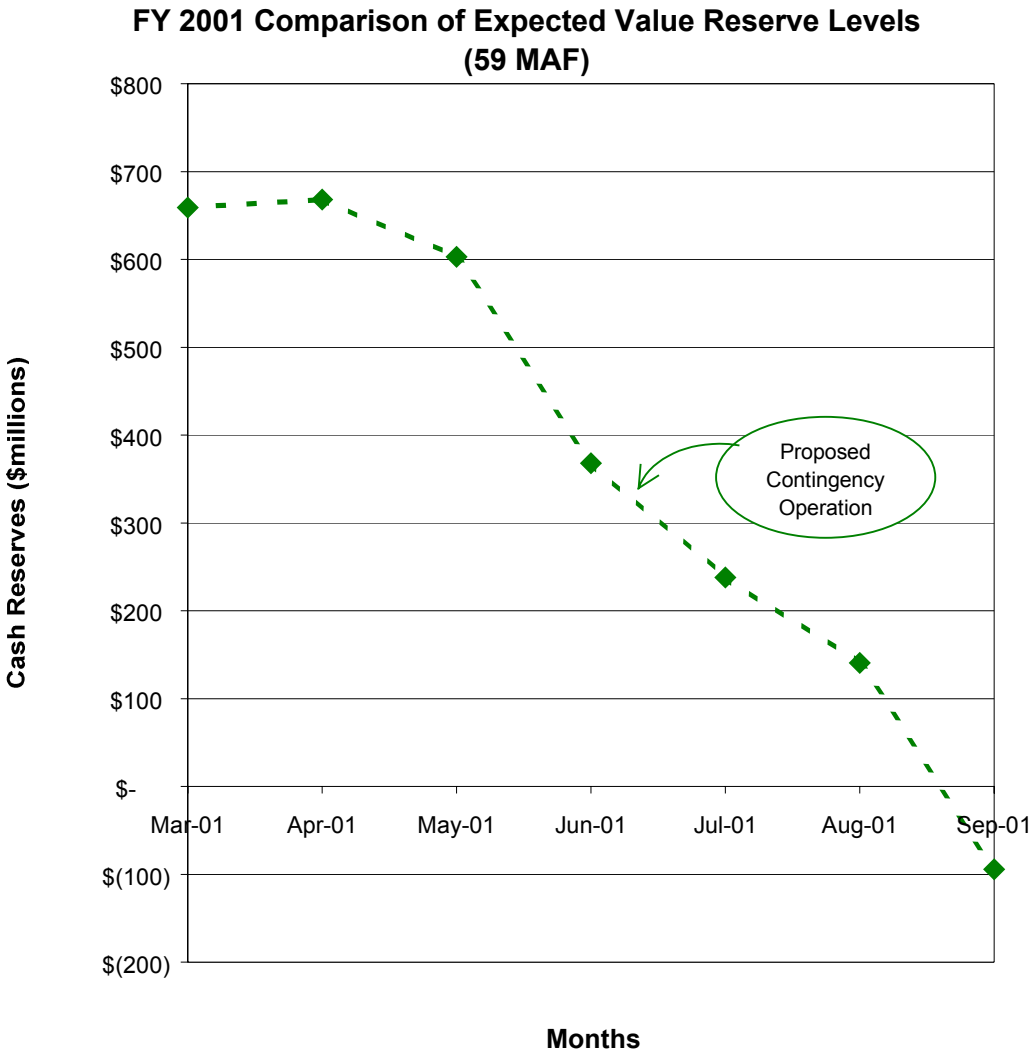
1. Cal ISO/PX don't pay anything due.
2. 4H10c credits applied monthly starting in February.
3. In the Biological Opinion case, the monthly expected value reserve levels represent the mean of 262 scenarios which are based on 1 water year at 57 MAF.

Proposed Contingency Operation - Study Summary

- April/May- meet Vernita Bar minimum flow
- GCL: Partial June refill to 1283'; end of August at 1278'
- DWR: Partial June refill to 1580'; end of August at 1520'
- HGH: Run min making sure to end August at 3540'
  (shape any excess water into August)
- LIB: Run 4 kcfs March through May, and 6 kcfs June through August
  End of August at 2439'
  (shape any excess water into April 15 through May)
- April 15-June spill:
  full at BON, 40% at TDA; minimum spill levels at other projects
- July-August spill:
  minimum at all projects
- Attempt to meet BiOp ending August elevations

NOTE: CRITFC, ID/MT, WA, and OR have also submitted contingency operational proposals that have not been modeled by BPA.

Proposed Contingency Operation - FY2001 Financials



Cash Flow

(Probability of < $0 Reserves)

	Proposed Contingency Operations
Mar-01	0.0%
Apr-01	0.0%
May-01	0.2%
Jun-01	7.5%
Jul-01	23.5%
Aug-01	29.7%
Sep-01	45.8%

FY2001 Ending Reserve Levels

(Probability of < $300M Reserves)
69.3%

(Probability of < $650M Reserves)
91.1%

Assumptions:
1. Cal ISO/PX don't pay anything due.
2. 4H10c credits applied monthly starting in February.
3. The monthly expected value reserve levels represent the mean of 2100 scenarios which are based on 8 different water years with range from 52.7 to 64.4 MAF runoff.

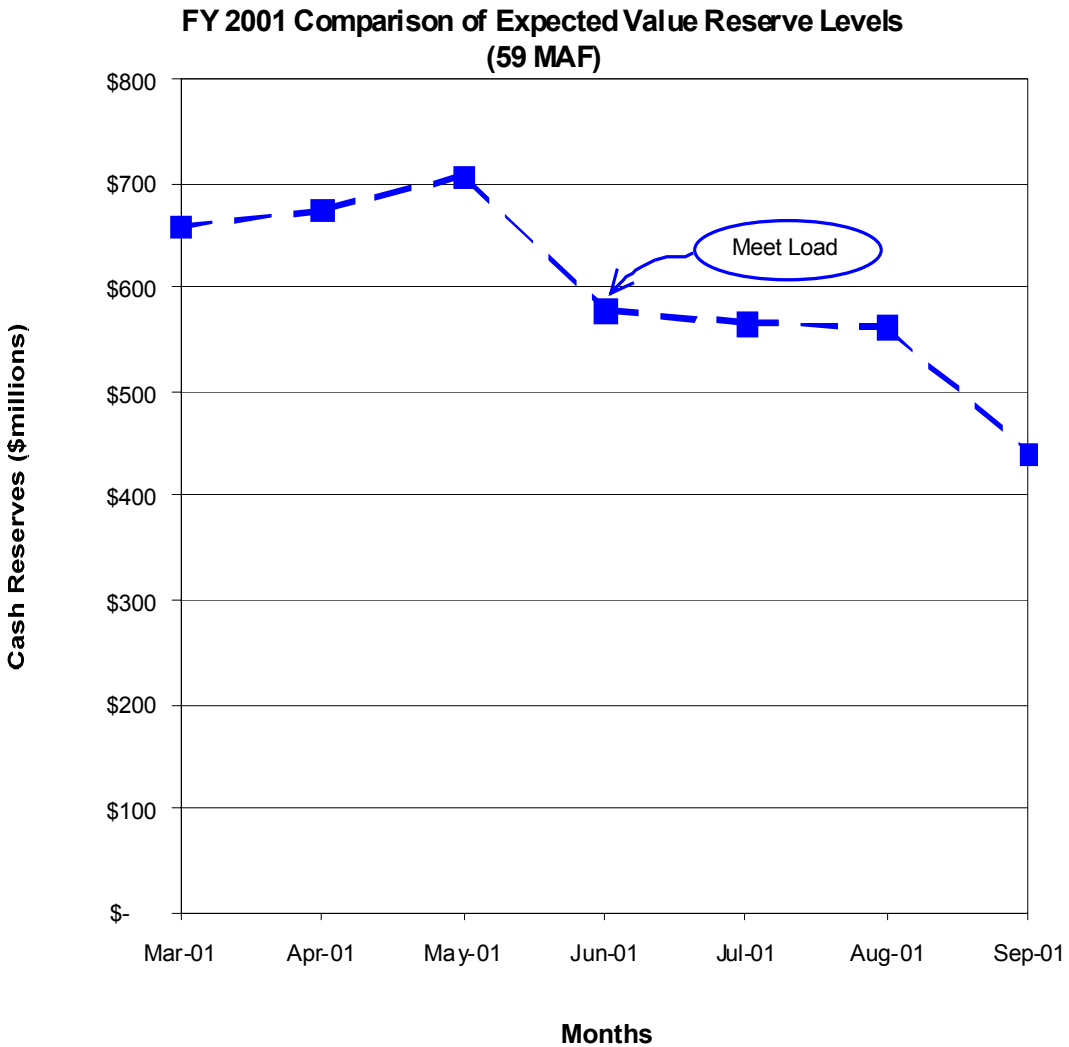
Meet Load Study Summary

- FCRPS operated to meet load demands
- Assumed no spill
- Did not operate to meet any flow objectives
  (No Vernita Bar, Spring or Summer flow targets)
- Any additional water beyond what is needed to meet load was stored at upriver projects

FLEXIBLE STORAGE		
Volume	KSFD[1]	MW-Months
52.7	-575	-1150[2]
53.9	1109	2189
57.4	1883	3717
59.1	1586	3131
61.6	2513	4960
62.1	2483	4900
63.2	3556	7018
64.4	3260	6434

[1] KSFD = 1 kcfs for 24 hours
[2] -1150 was modeled as a May-June purchase rather than as an amount of water borrowed from OY02

Meet Load Study - FY2001 Financials



Cash Flow

(Probability of < $0 Reserves)

	Meet Load
Mar-01	0.0%
Apr-01	0.0%
May-01	0.0%
Jun-01	0.0%
Jul-01	0.0%
Aug-01	0.0%
Sep-01	0.5%

FY2001 Ending Reserve Levels

(Probability of < $300M Reserves)

16.2%

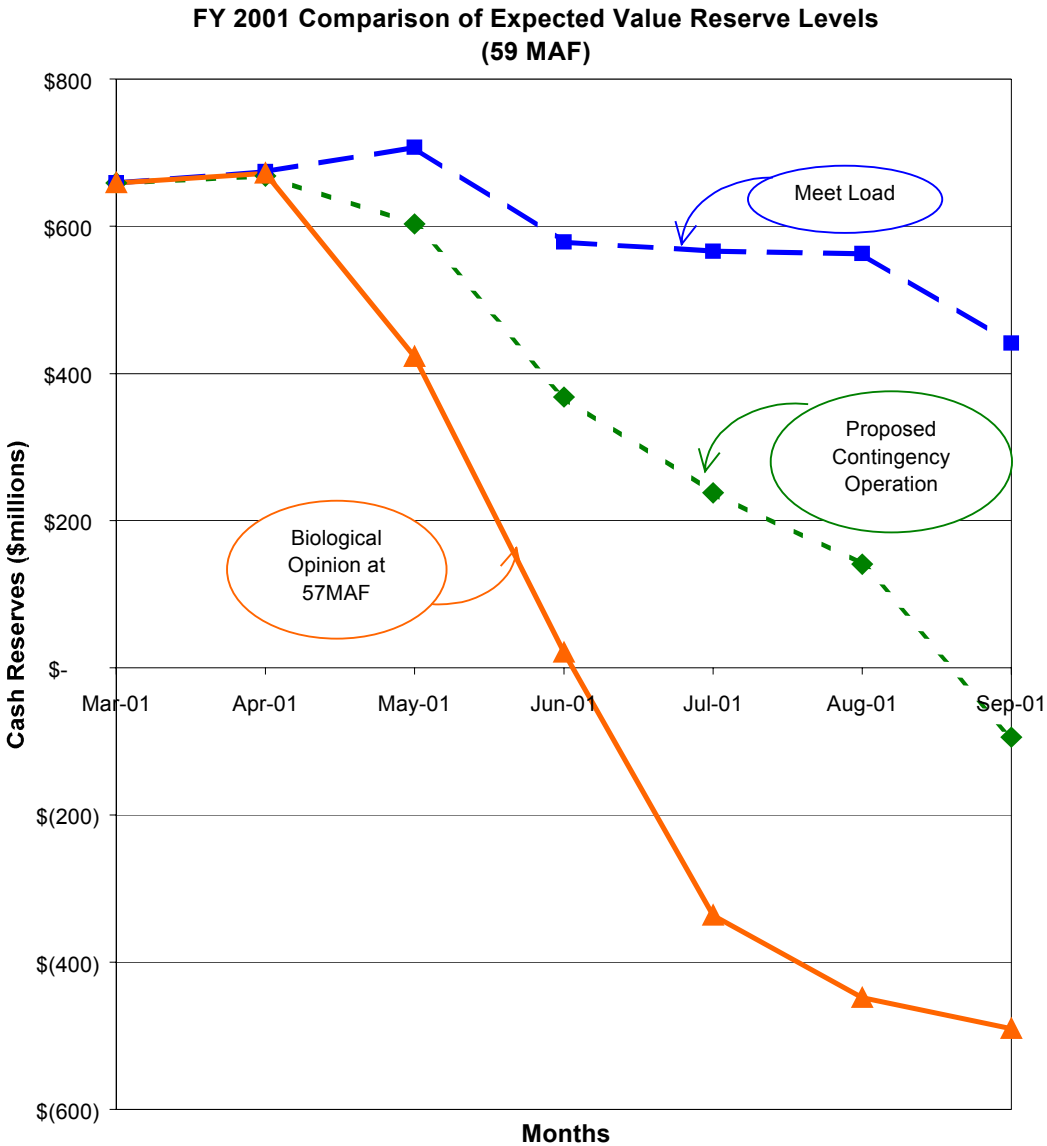
(Probability of < $650M Reserves)

100.0%

Assumptions:

1. Cal ISO/PX don't pay anything due.
2. 4H10c credits applied monthly starting in February.
3. The monthly expected value reserve levels represent the mean of 2100 scenarios which are based on 8 different water years with range from 52.7 to 64.4 MAF runoff.

FY2001 Financials - All Scenarios



Cash Flow

(Probability of < $0 Reserves)

	Meet Biological Opinion	*Proposed Contingency Operation*	*Meet Load*
Mar-01	0.0%	0.0%	0.0%
Apr-01	0.0%	0.0%	0.0%
May-01	3.4%	0.2%	0.0%
Jun-01	39.3%	7.5%	0.0%
Jul-01	85.5%	23.5%	0.0%
Aug-01	93.1%	29.7%	0.0%
Sep-01	92.4%	45.8%	0.5%

FY2001 Ending Reserve Levels

(Probability of < $300M Reserves)		
95.4%	69.3%	16.2%
(Probability of < $650M Reserves)		
100.0%	91.1%	100.0%

Assumptions:
1. Cal ISO/PX don't pay anything due.
2. 4H10c credits applied monthly starting in February.
3. For the Proposed Contingency Operations and the Meet Load cases the monthly expected value reserve levels represent the mean of 2100 scenarios which are based on 8 different water years with range from 52.7 to 64.4 MAF runoff.
4. The Biological Opinion case the monthly expected value reserve levels represent the mean of 262 scenarios which are based on 1 water year at 57MAF.

The Water Situation - Historical Forecast Error

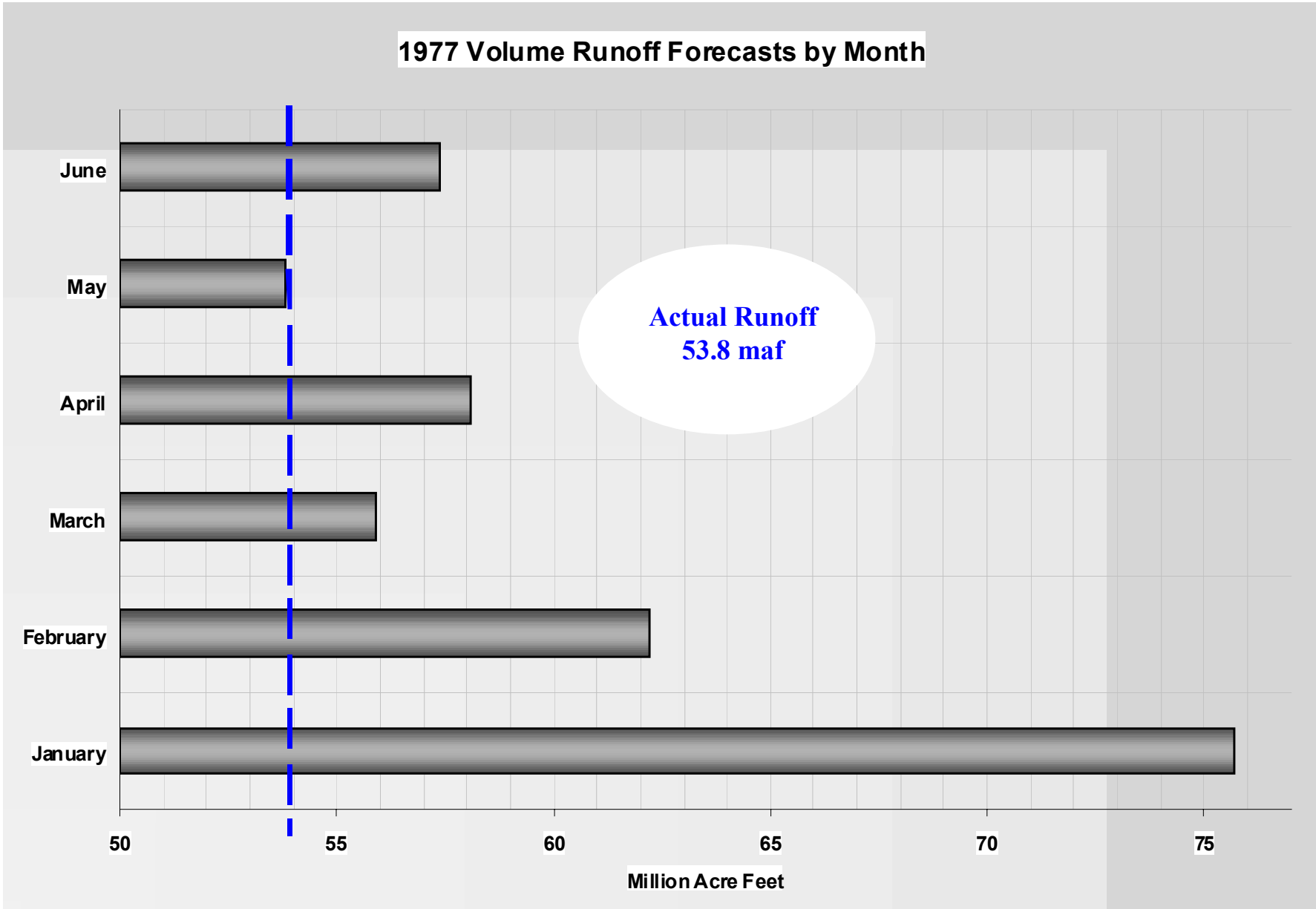
March Mid-Month RFC Jan-July Volume Forecast		
Assumed Precipitation	100%*	75%
MAF at The Dalles	57.6	51.5
% of Normal	54%	49%

**75% for 2nd half of March, 100% April-July.*

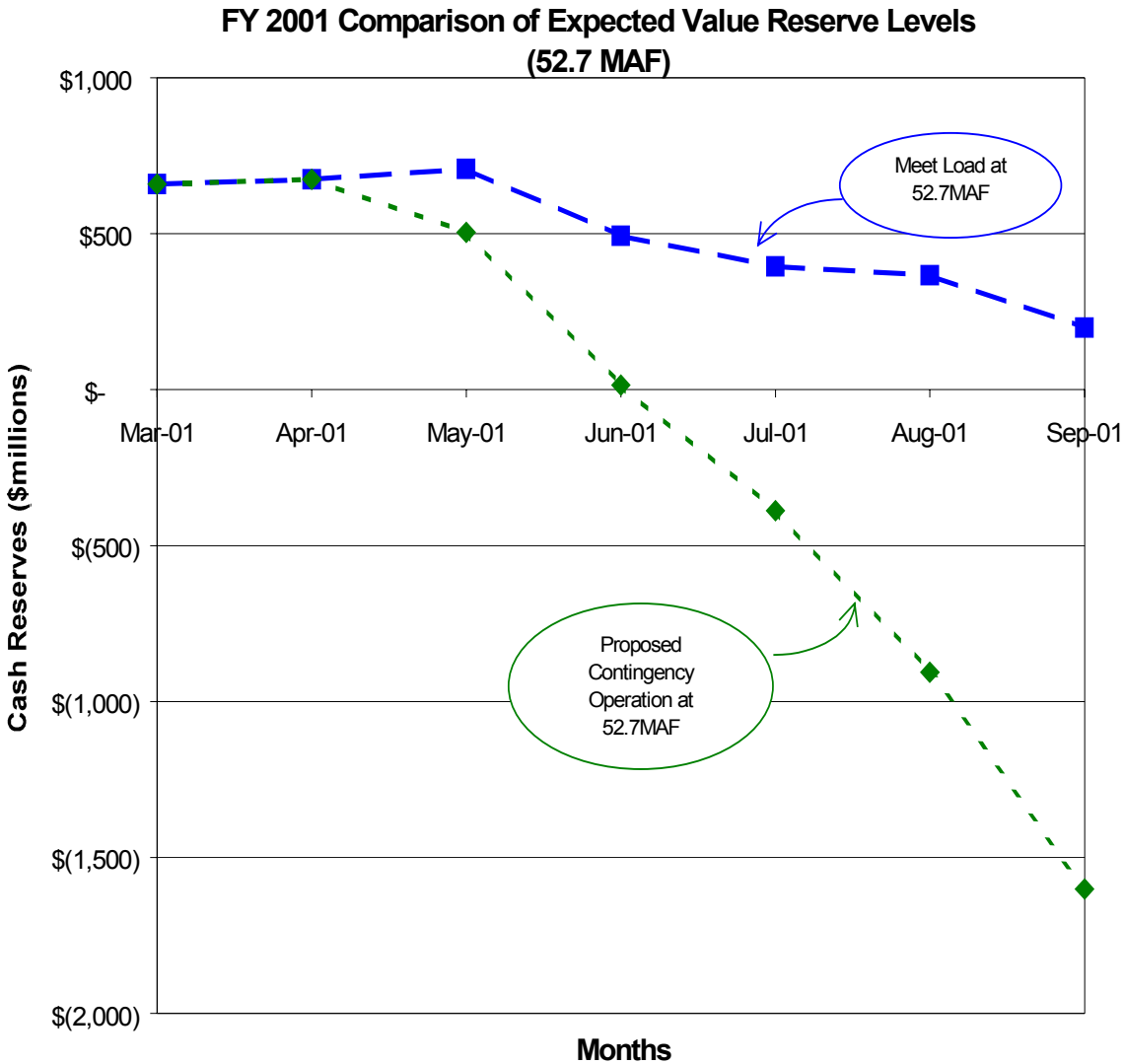
- For March forecasts, the National Weather Service's River Forecast Center (RFC) procedure has a 95% confidence error of +/- 15.5 MAF.
- Out of the historic forecast record (1929-2000), there are six March forecasts <75 MAF. Of those forecasts, 2 over-estimated and 4 under-estimated actual runoff. None of the errors were greater than 5.1 MAF.
- Based on this small sample, it appears the spring months are highly volatile and can swing the actual runoff either direction from the March final forecast, but probably less than 15.5 MAF.
- Main factors affecting the error are March-July precipitation, some of the snowpack coming off after July, and melt not resulting in streamflows due to evaporation and absorption.
- As we progress through the Spring, the uncertainty of the forecasts decreases, but the 95% confidence error is still fairly high:

April	+/- 11.7 MAF
May	+/- 9.2 MAF
June	+/- 8.1 MAF

The Water Situation - Historical Forecast Error



FY2001 Financials at 52.7 maf



Cash Flow

(Probability of < $0 Reserves)

	Proposed Contingency Operation at 52.7 MAF	*Meet Load at 52.7 MAF*
Mar-01	0.0%	0.0%
Apr-01	0.0%	0.0%
May-01	0.8%	0.0%
Jun-01	42.4%	0.0%
Jul-01	92.0%	0.0%
Aug-01	100.0%	0.0%
Sep-01	100.0%	4.2%

FY2001 Ending Reserve Levels

(Probability of < $300M Reserves)		
	100.0%	74.4%
(Probability of < $650M Reserves)		
	100.0%	100.0%

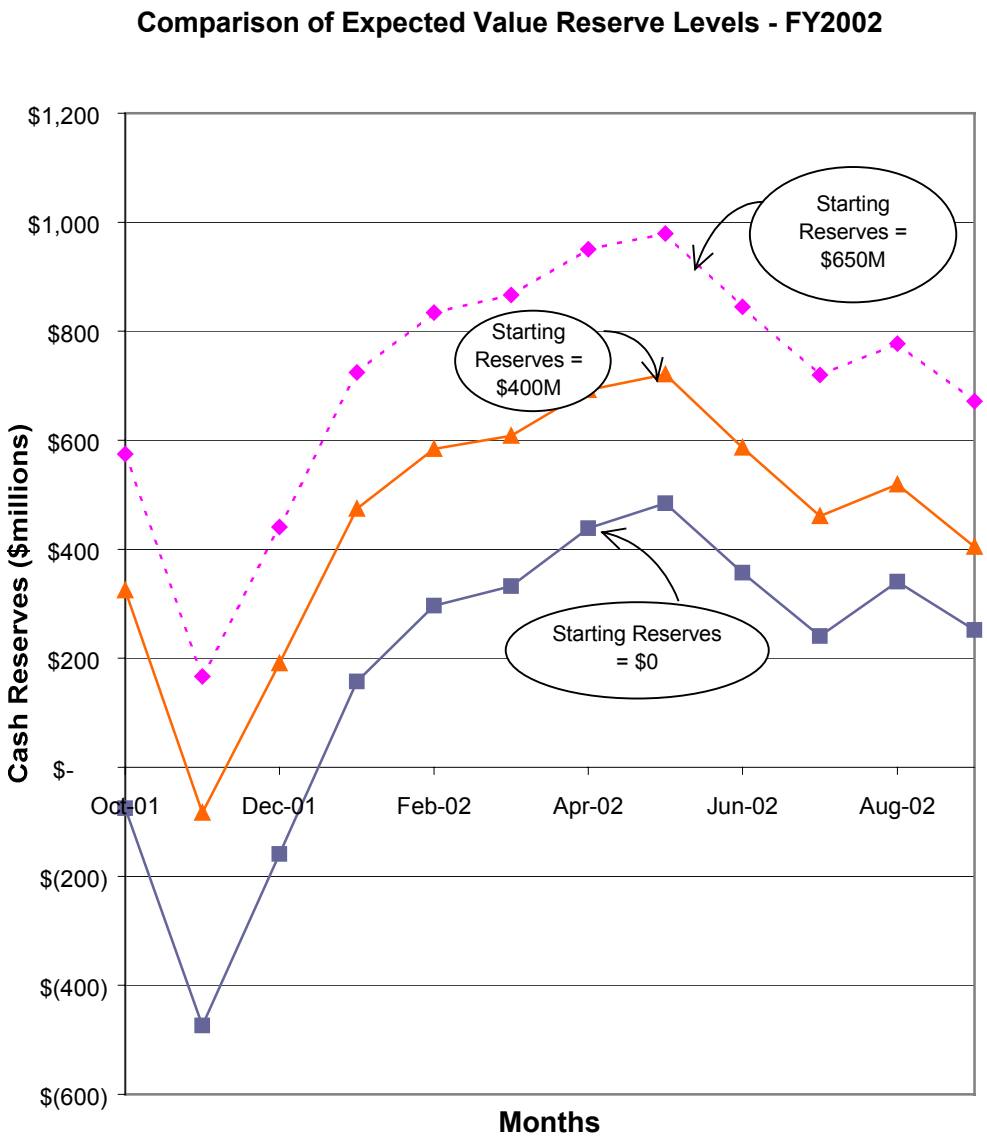
Assumptions:

1. Cal ISO/PX don't pay anything due.
2. 4H10c credits applied monthly starting in February.
3. The monthly expected value reserve levels represent the mean of 262 scenarios which are based on one water year at 52.7 MAF.

FY2002 Financials - Introduction

- Independent of the level of the rate increase, BPA has cash flow considerations for FY 2002 that can be impacted by October 1, 2001 starting reserve levels.
- The following analysis assumes a 260% rate increase.
- To the degree that the actual rate increase differs from the assumed rate increase, the results of this analysis may change.

FY2002 Financials



Cash Flow

(Probability of Reaching $0 Reserves)

	Starting Reserves - $0	*Starting Reserves - $400M*	*Starting Reserves - $650M*
Oct-01	100.0%	0.0%	0.0%
Nov-01	100.0%	46.7%	11.3%
Dec-01	93.7%	7.0%	3.0%
Jan-02	8.3%	2.7%	2.0%
Feb-02	13.3%	8.7%	6.0%
Mar-02	15.3%	12.3%	10.7%
Apr-02	15.0%	13.3%	11.3%
May-02	16.3%	14.7%	12.3%
Jun-02	18.3%	16.7%	13.3%
Jul-02	22.0%	18.0%	15.7%
Aug-02	23.3%	18.7%	13.7%
Sep-02	31.7%	26.7%	17.3%

Assumptions:

1. Rate increase for illustrative purposes only.
2. 2000 Biological Opinion
3. Augmentation to critical water
4. Assumes reservoirs end at BiOp levels
5. Below average water assumed for fall
6. Full range of water conditions Jan-August '02
7. Normal chum operation subject to Coulee draft limits

Options for Using Flexible Storage

- If a greater than 53 MAF condition materializes, the Region has several choices about how to operate the system:
    1. Generate energy and revenue to build cash reserves
    2. Spill to improve fish passage and survival
    3. Draft storage reservoirs deeper to enhance summer flows
    4. Store excess water for FY 2002

Options for Using Flexible Storage

Option 1 - Generate and Build Cash Reserves

Flow Scenarios	Cash Reserves End of FY 2001 (million $)	Flexible Storage (MW-mos)	Cash Reserves End of FY'01 *Sell all of Flexible Storage* (million $)		Residual Storage *After EOY $650 Reserves* (MW-mos)	
			$250/MWh	$500/MWh	$250/MWh	$500/MWh
52.7	$340[1]	-1150[2]	$340	$340	-1685	-842
53.9	$550	2189	$949	$1349	1646	1917
57.4	$550	3717	$1228	$1907	3174	3445
59.1	$550	3131	$1121	$1693	2588	2859
61.6	$550	4960	$1455	$2360	4417	4688
62.1	$550	4900	$1444	$2339	4357	4628
63.2	$550	7018	$1831	$3112	6475	6746
64.4	$550	6434	$1724	$2898	5891	6162

[1]Based on $250/MWh, not the full range of market prices used in earlier financial analyses in this presentation.
[2]-1150 was modeled as a May-June purchase rather than as an amount of water borrowed from OY02

- Flexible storage is the amount of water in reservoirs (including Canada) above BiOp levels.
- Residual storage is the amount of water left in Flexible storage after BPA sells enough energy to reach $650 million in cash reserves. The $650 million cash reserve level is for illustrative purposes.
- The Meet Load scenario assumes no Vernita Bar operation, so both Flexible and Residual Storage must be decremented if we do this operation. This would also require adjustments to inventory and ending cash reserves.
- The above point estimates were not determined using probabilistic analysis, and therefore, don't represent expected values, particular confidence intervals, ranges of possible outcomes, or other statistical calculations.
- These estimates are for illustrative purposes only.
- BPA considers each scenario as equally likely, therefore BPA can't project with certainty whether or not any flexibility will be available prior to June or July.

Options for Using Flexible Storage

Option 2 - Spill to Improve Fish Flows and Survival

- The flexible storage analysis on the previous page would indicate that 62 MAF or better is needed to meet spill levels in the Contingency Operation
- Greater than 62 MAF would be needed to meet full BiOp spill levels.

Spill to MW-Months Conversion

BiOp Spill Levels

MW-Months	April	May	June	July	August	Total
Bonneville	324	503	487	412	316	2,042
The Dalles	196	356	382	293	243	1,469
John Day	234	426	456	350	290	1,755
McNary	222	344	333	0	0	900
Ice Harbor	252	405	322	203	152	1,334
TOTAL	1,228	2,035	1,980	1,258	1,001	7,501

Proposed Contingency Operation Spill Levels

MW-Months	April	May	June	July	August	Total
Bonneville	278	532	556	412	316	2,094
The Dalles	147	356	382	293	243	1,421
John Day	58	142	152	117	97	566
McNary	77	187	200	0	0	464
Ice Harbor	70	217	175	145	145	752
TOTAL	630	1,434	1,465	967	800	5,296

Issue Summary

- 53 MAF is the 2001 threshold at which BPA cannot simultaneously maintain financial solvency, meet its firm load, maintain any spill for fish and keep reservoirs from drafting below summer limits.
- If a greater than 53 MAF condition materializes, the Region has several choices about how to operate the system:
  - Draft storage reservoirs deeper to enhance summer flows
  - Spill to improve fish passage and survival
  - Generate energy and revenue to build cash reserves and avoid cash flow issues in Fiscal Years 2001 and 2002
  - Store water excess to that required to meet load to enhance:
    - 2002 reliability
    - 2002 conditions for fish, and
    - cash flow in Fiscal Year 2002
- Even with a substantial rate increase on October 1, 2001, BPA has a cash flow problem in the first 6 months of the new rate period.

Upcoming Operations Issues

- Vernita Bar (end of March / early April)
- Spring McNary Transport
- Level of Spring Spill Relative to Volume Forecast Uncertainty
- Start of Spring Spill
  - Ice Harbor (April 3)
  - Lower River (April 10)
- Spring Flow vs. Summer Flow
- Summer Spill
- End of Year Reservoir Elevations

Conclusion

- Federal agencies have drafted “Proposed Principles for 2001 FCRPS Operations” and are soliciting feedback from regional parties through IT, TMT, and other forums.
- The draft principles currently out for review contain proposed operational priorities for 2001.
- The basic risk management objective in these principles is to avoid failure in the three risk areas of biological harm to fish, power system reliability, and BPA’s financial health.
- The operation under these principles will be dynamic and will change as conditions change.
- The Federal Executives recognize the importance of engaging the region on operating priorities and principles during this difficult condition and will endeavor to do so.

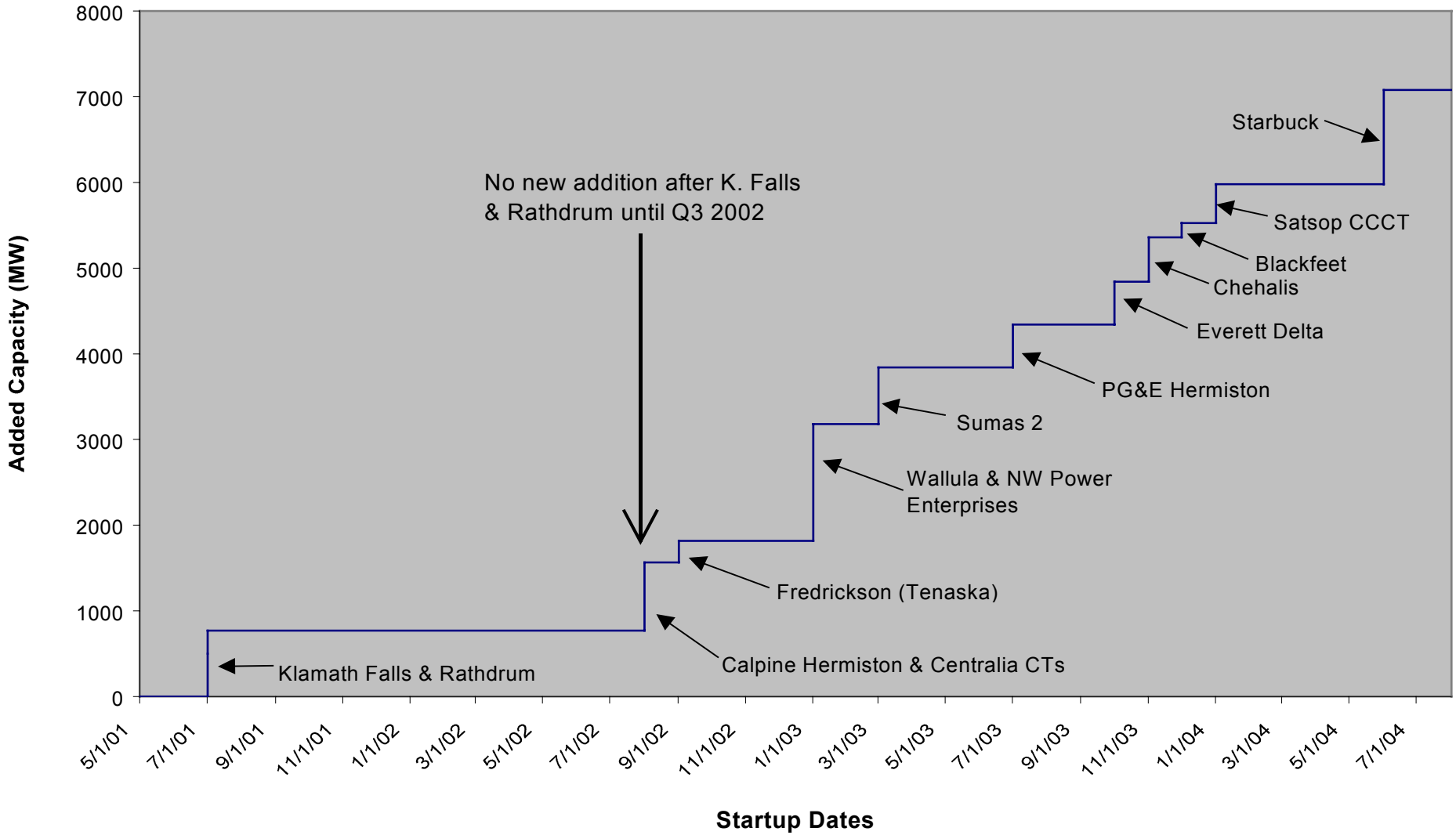
Appendix

In the Northwest Power Planning Council reported in its March 6, 2000 Northwest Power Supply Adequacy/Reliability Study:

- The PNW probability of a generation shortfall during the winter reaches approximately 24 percent by 2003 if no additional resources are added (beyond those already under construction).
- This means an almost one in four chance of one not getting through the winter without a supply interruption.
- These supply interruption events would typically be the result of some combination of poor hydro conditions, higher than normal demand due to weather conditions, and unplanned generation outages.
- The Council believes that a 24-percent probability of supply inadequacy is unacceptably large since it exceeds the traditional utility standard for loss of load of no more than 5 percent.
- The results of this study show a likelihood of interruption almost five times higher than this traditional standard. In order to meet that standard, the Council estimates that the PNW needs to add approximately 3,000 megawatts of generating resources by 2003.
- New resources could, however, be some combination of new generating capacity and voluntary load reduction.

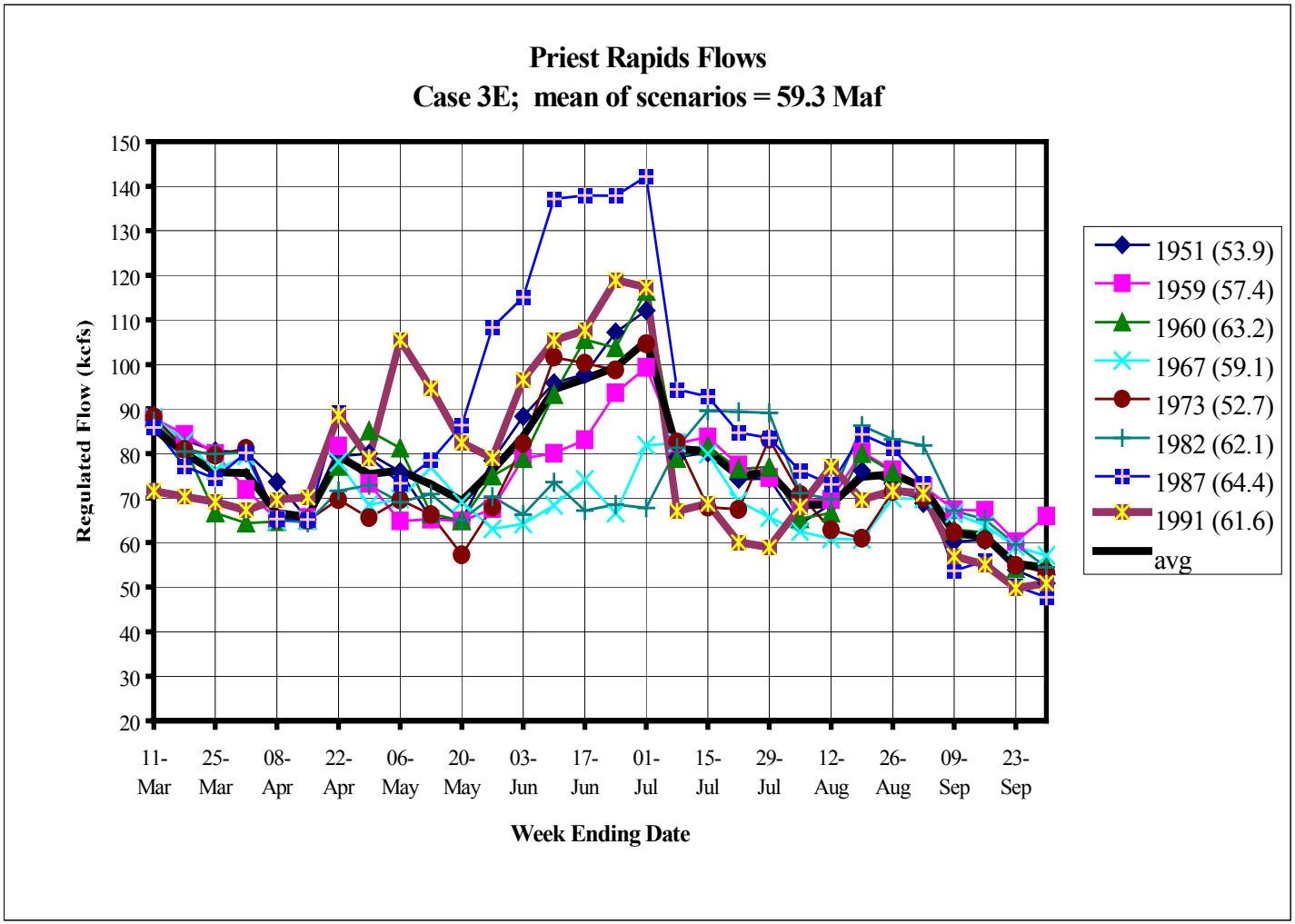
Appendix

Planned PNW Regional CT Additions On-line 2001-2004

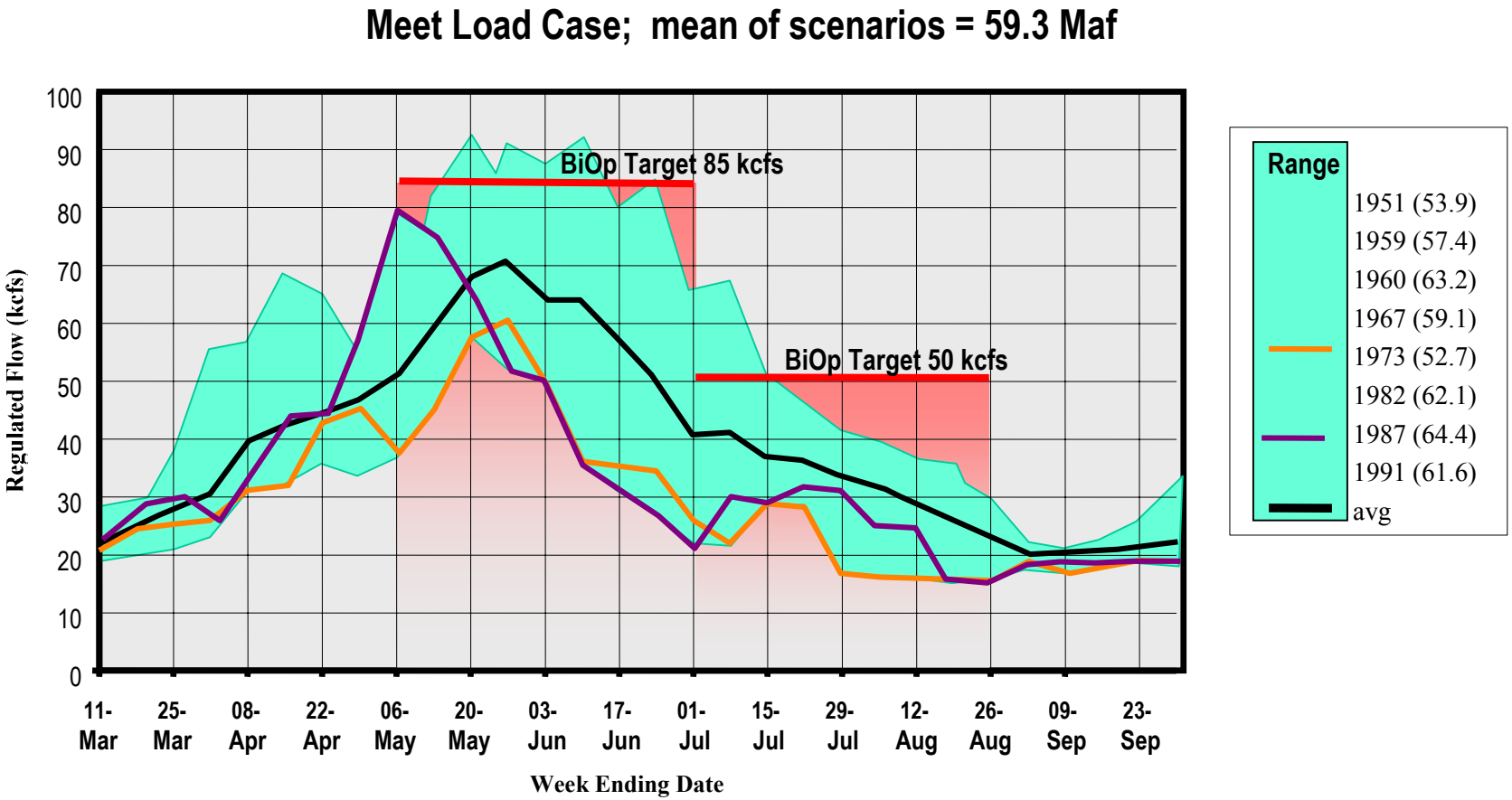


Appendix

Contingency Operation - Priest Rapids Flows

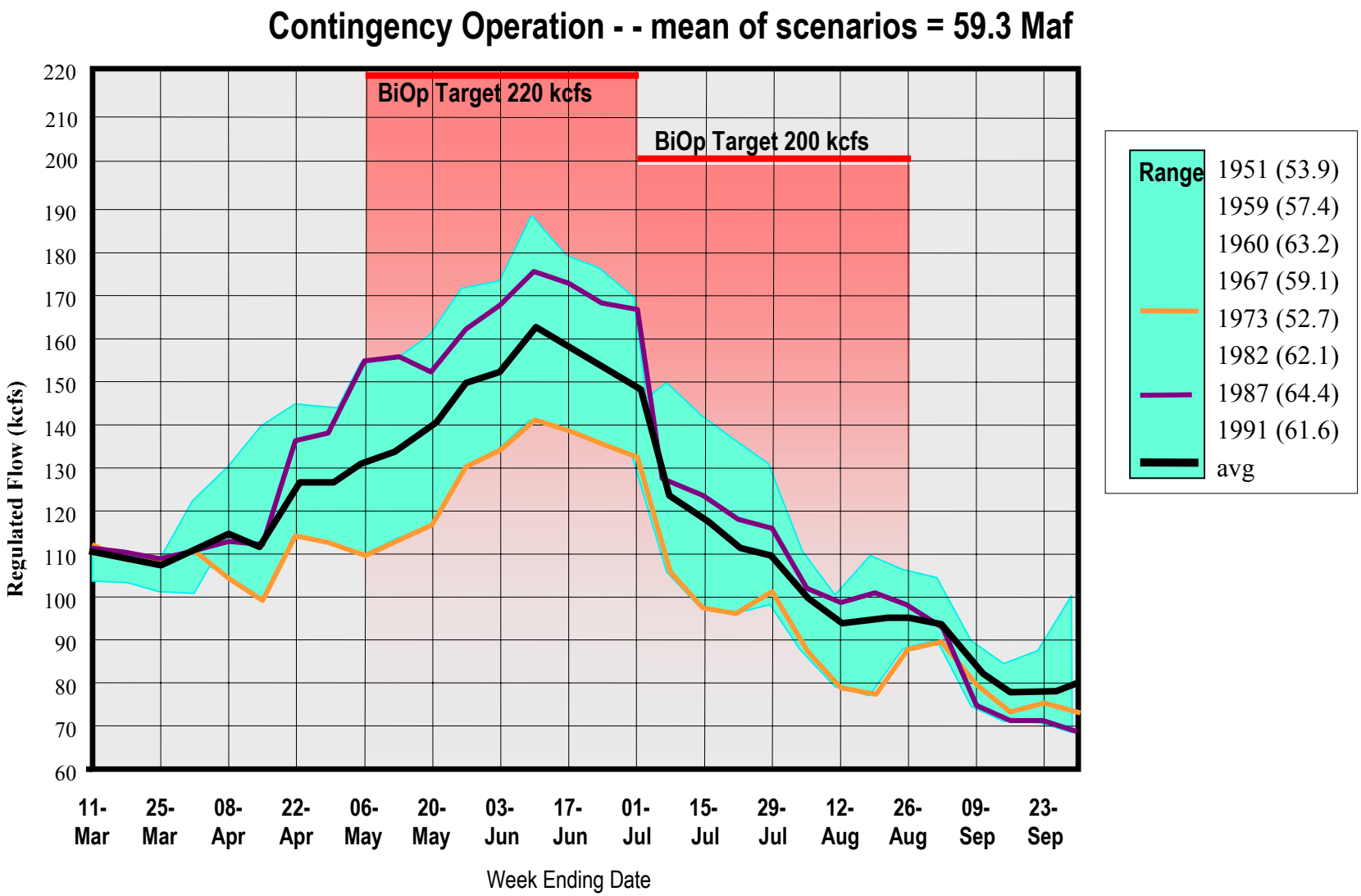


Appendix - Lower Granite Flows



Note: Range area does not represent coincidental peaks

Appendix - McNary Flows



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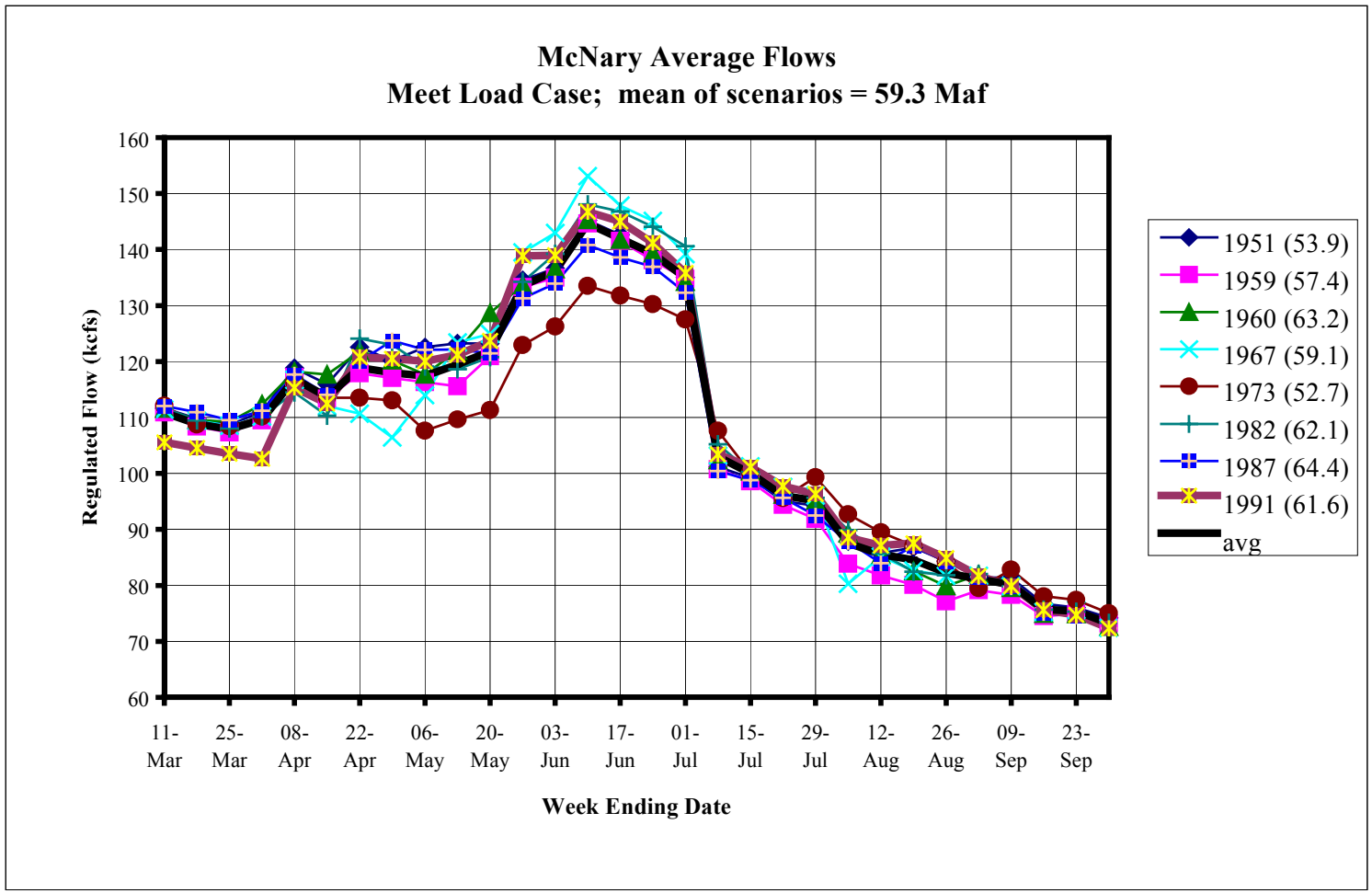
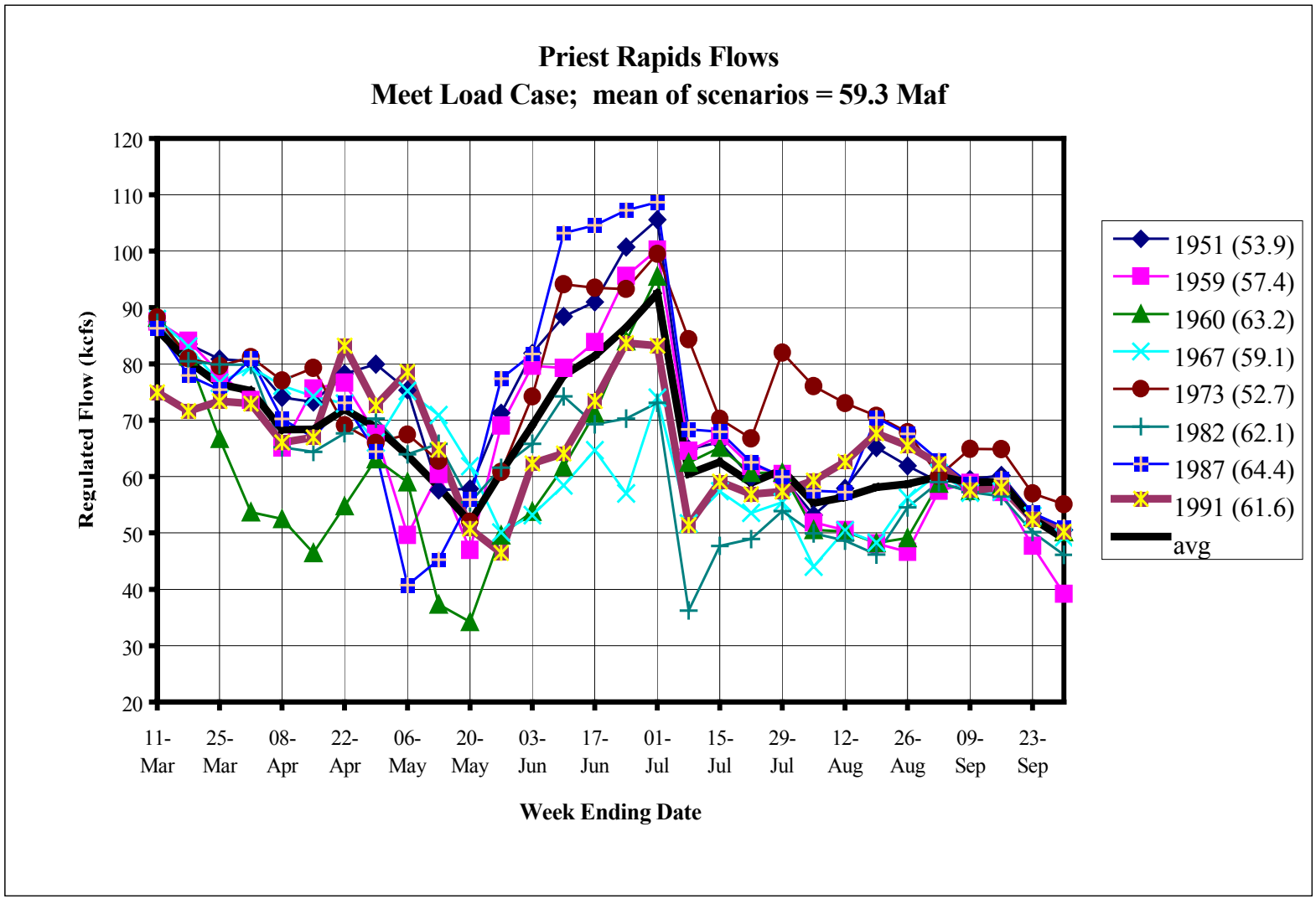

McNary Average Flows
Meet Load Case; mean of scenarios = 59.3 Maf
Regulated Flow (kcfs)
160
150
140
130
120
110
100
90
80
70
60
11-Mar
25-Mar
08-Apr
22-Apr
06-May
20-May
03-Jun
17-Jun
01-Jul
15-Jul
29-Jul
12-Aug
26-Aug
09-Sep
23-Sep
Week Ending Date
1951 (53.9)
1959 (57.4)
1960 (63.2)
1967 (59.1)
1973 (52.7)
1982 (62.1)
1987 (64.4)
1991 (61.6)
avg

Appendix


Priest Rapids Flows
Meet Load Case; mean of scenarios = 59.3 Maf
Regulated Flow (kcfs)
120
110
100
90
80
70
60
50
40
30
20
11-Mar
25-Mar
08-Apr
22-Apr
06-May
20-May
03-Jun
17-Jun
01-Jul
15-Jul
29-Jul
12-Aug
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1951 (53.9)
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avg

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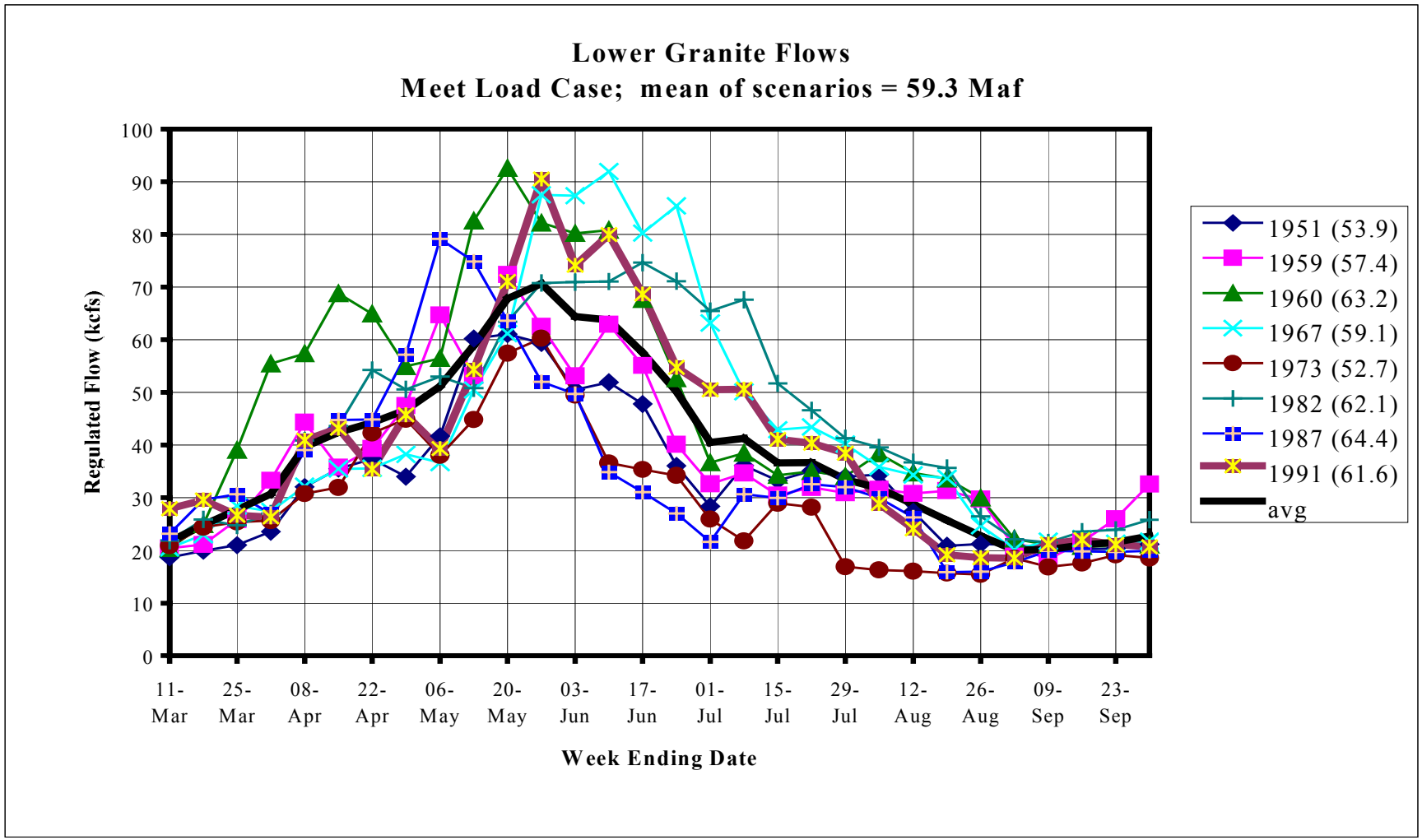
Lower Granite Flows
Meet Load Case; mean of scenarios = 59.3 Maf
Regulated Flow (kcfs)
100
90
80
70
60
50
40
30
20
10
0
11-Mar
25-Mar
08-Apr
22-Apr
06-May
20-May
03-Jun
17-Jun
01-Jul
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1959 (57.4)
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1973 (52.7)
1982 (62.1)
1987 (64.4)
1991 (61.6)
avg

Appendix

Spill Comparison

			Proposed Contingency		BiOp Spill Levels	
Min PH flow (kcfs)	H/K	Project	Spring Spill (kcfs) (unless % noted)	Summer Spill (kcfs) (unless % noted)	Spring Spill (kcfs) (unless % noted)	Summer Spill (kcfs) (unless % noted)
30	4.7	Bonneville	120 day & nite	120 day & nite	75 day / 135 nite	75 day/135 nite
50	6.2	The Dalles	40% for 24 hrs	40% for 24 hrs	40% for 24 hrs	40% for 24 hrs
50	7.9	John Day	25% for 12 hrs	25% for 12 hrs	15% day/ 60% nite	15% day/ 60% nite
50	5.2	McNary	50% for 12 hrs	N/A	130 for 12 hrs	N/A
7.5-9.5	7.1	Ice Harbor	50% and 20 min	50% and 20 min	45 day/90 nite	45 day/90 nite
	7.0	Lower Monumental	N/A	N/A	N/A	N/A
	7.0	Little Goose	N/A	N/A	N/A	N/A
	7.0	Lower Granite	N/A	N/A	N/A	N/A